POLICY RESEARCH WORKING PAPER 2986

Government Bonds in Domestic and Foreign Currency

The Role of Macroeconomic and Institutional Factors

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The World Bank
Development Research Group
Macroeconomics and Growth
March 2003

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Abstract

The development of government bond markets and, in particular, their currency composition have recently received much interest, partly because of their relation with financial crises. The authors study the determinants of the size and currency composition of government bond markets for a panel of industrial and developing countries. They find that countries with larger economies, greater domestic investor bases, and more flexible exchange rate regimes have larger domestic currency bond markets, while smaller economies rely more on foreign currency bonds. Better institutional frameworks and macroeconomic fundamentals enhance both domestic currency bond markets and increase countries' ability to issue foreign currency bonds, while they raise the share of foreign exchange bonds.

This paper—a product of Macroeconomics and Growth, Development Research Group—is part of a larger effort in the group to understand how capital markets work. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Emily Khine, room MC3-347, telephone 202-473-7471, fax 202-522-3518, email address kkhine@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at stijn@fee.uva.nl, dklingebiel@worldbank.org, or sschmukler@worldbank.org. March 2003. (39 pages)

Government Bonds in Domestic and Foreign Currency: The Role of Macroeconomic and Institutional Factors

by

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JEL classification codes: F21, F33, F34, F36, G15, G18

Keywords: government debt, government bond markets, sovereign bonds, foreign currency debt, currency structure.

Claessens is with the University of Amsterdam and CEPR and Klingebiel and Schmukler are with the World Bank. We would like to thank Ron McKinnon and participants at a presentation held at Stanford University for very useful comments. We would also like to thank Guillermo Noguera for excellent research assistance and Denis Petre from the Bank for International Settlements for help with the data. The views expressed in this paper are those of the authors and do not necessarily represent those of the World Bank. Email addresses: stijn@fee.uva.nl, dklingebiel@worldbank.org, and sschmukler@worldbank.org.

1. Introduction

During the 1990s, capital markets around the world have experienced rapid growth and have become increasingly more integrated. These trends are reflected in the growth of domestic public bond markets and governments' participation in international capital markets. At the same time, there have been many financial crises, especially in emerging markets, a phenomenon that has been explained in part by the currency composition of government debt. These factors have led to a growing interest on the drivers of bond market development and the currency composition of government debt.

The literature that studies government debt is vast, with particular attention shifting more recently to government bonds. There are many studies on the general determinants of governments' desire and ability to issue debt. In this literature, macroeconomic stability and political economy factors are typically found to be important factors.[1] The literature following the debt crisis of the early-1980s concentrated on analyzing the determinants of a country's ability to issue external debt, then mostly in the form of loans from commercial banks.[2] This literature focused on the sovereign aspect, i.e., the fact that lenders cannot seize the assets of sovereign issuers. The literature argues that the amount of debt countries can issue depends on the ability of lenders to impose sanctions other than the seizure of assets, as would be the case in the domestic context. Following the debt crisis, many countries' loans were restructured, often into Brady bonds, as countries regained access to international markets. New debt

[1] See Persson and Tabellini (1994) for a collection of political economy papers, and Persson and Tabellini (1999) and Walsh (1998) for reviews.

[2] See Eaton and Fernandez (1995) for a review and Eaton and Gersovitz (1981) and Bulow and Rogoff (1989) for the seminal theoretical work.

took increasingly the form of international bonds. The research focus evolved into the explanation of spreads and pricing of government bonds.[3]

With the rise in financial crises in the 1990s, government bond markets have gained significant attention as the structure and composition of government debt can lead to vulnerabilities and can trigger a financial crisis. Two aspects have attracted particular interest. One is the maturity structure of debt. It is typically relatively inexpensive to borrow short term, since spreads usually contain a term risk premium. But a high proportion of short-term debt tends to increase the probability of self-fulfilling crises, as investors might suddenly decide not to roll over maturing debt or increase required yields on new debt. Shallow bond markets can make this problem worse as they not only limit the governments' capacity to lengthen debt profiles but also decrease the ability of the government to roll over outstanding debt and investors' ability to liquidate positions. The literature that studies the maturity structure is large and includes Calvo and Mendoza (1996), Sachs, Tornell, and Velasco (1996), Rodrik and Velasco (1999), and Jeanne (2000).[4]

The second aspect that has received widespread attention is the currency composition of government bonds. For some countries, especially emerging markets, foreign currency debt can be less expensive (or at least appear to be so) than domestic currency debt, prompting governments to borrow in foreign currency. But foreign currency debt exposes governments to exchange rate risk, as government revenues are

[3] Perhaps the first study was Edwards (1986), but has since evolved into a large literature mostly focusing on secondary market prices, with some studies on primary issues (e.g., Eichengreen and Mody 1998).

[4] The maturity structure choice has led to the various rules on what are acceptable levels of debt payments falling due relative to the level of foreign exchange reserves (named after their principal or first advocates, the Calvo, Guidotti, and Greenspan rules). One rule of thumb has been that a country's government external debt repayments falling due in the next 12 months should not exceed its foreign exchange reserves.

typically more indexed to local currency values, and creates the risk of a financial crisis, as self-fulfilling runs become possible. An important factor that can impact the currency denomination of debt is the choice of exchange rate regime. Proponents of hard currency pegs argue that a strong domestic currency, backed with international reserves, can create credibility and lead to more financial intermediation in domestic currency, thereby allowing countries to issue more debt in local currency. But others argue that a fixed exchange rate leads to greater incentives for the use of foreign currency debt by both the public and private sector, increasing the degree of "liability dollarization." For example, fixed exchange rate regimes might induce agents to underestimate the possibility of a future currency change (Eichengreen 1994), thus leading to too much foreign exchange borrowing. Others claim that fixed exchange rates generate moral hazard, given the implicit guarantee provided by international reserves or bailout guarantees offered by governments or international organizations (McKinnon and Pill 1999, Dooley 2000, Schneider and Tornell 2000, and Burnside, Eichenbaum and Rebelo 2001). A related literature (for example, Eichengreen and Hausmann 1999, Hausmann, Panizza, and Stein 2001, Chamon and Hausmann 2002, and Hausmann and Panizza 2002) has analyzed the "original sin," which is typically defined as why emerging markets cannot issue long-term debt in domestic currency.

As government bond markets have become a large fraction of capital markets in many countries, a literature has emerged analyzing the development of government bonds markets in their own right. This literature, separate from the international finance literature described above, concentrates on the benefits of and the preconditions for

developing government bond markets.[5] The studies generally highlight the benefits of government bond markets as bonds can provide an alternative, non-inflationary source of financing for governments, foster a healthy capital market, and improve the functioning of the financial system. Moreover, active government bond markets can have indirect benefits through better monetary management, enhanced transparency, a widening of investment opportunities, easier benchmarking of corporate sector claims, and a more efficient determination of the time value of money.[6] A related literature studies the institutional determinants of government and corporate bond markets, using experiences based mostly on developed countries and highlighting the importance of proper debt management and other institutional requirements.[7]

While the existing literature has raised many important issues related to government bonds, few papers have empirically investigated the issues. This paper tries to fill this gap by studying the link between macroeconomic and institutional factors and government bond markets. In particular, the paper concentrates on the following two issues. (i) What is the importance of the size of the domestic economy and the size of potential demand for developing domestic currency bond markets? In other words, are there economies of scale in bond market development and how feasible is it for small economies to develop their own currency bond markets? (ii) How do macroeconomic and institutional policies, including the exchange rate regime, affect the size and currency

[5] See Herring and Chatusripitak (2000) and Turner (2002) for an overview. Also, see Bank for International Settlements (BIS, 2002), Asian Development Bank (ADB, 2001), World Bank and International Monetary Fund (2001), and International Organization of Securities Commissions (IOSCO) (2002) for institutional reports.

[6] Besides the case studies collected in ADB (2001) and BIS (2002), there have been other case studies on the development of government bond markets like Harwood (2000), Sharma (2000), Bose, Coondoo, and Kumar (2001), and Patil (2001).

[7] See De Broeck et al. (1998), McCauley (1999), Schinasi and Smith (1998), Scott (2000), and Santos and Tsatsaronis (2002).

structure of government bonds? Although the existing literature provides many analytical insights to these questions, it does not offer many empirical answers, at least not using a broad data set.

In this paper, we study the determinants of the size and currency structure of government bond markets, analyzing both domestic and foreign currency denominated bonds over a relatively long time period, 1993-2000, and covering both developed and developing countries.[8] The time span covers a period starting when many government bond markets were established, in the early 1990s, to their rapid development thereafter. We use different explanatory macroeconomic and institutional factors, including variables related to the size of the economy, the investor base, and the exchange rate regime. The wide country coverage and use of different variables allow us to identify some of the factors that enable governments to develop their bond markets. By studying specifically the currency denomination of bonds, the paper provides evidence on the choice or ability of governments to issue domestic currency versus foreign currency denominated debt. The actual degree of foreign exchange borrowing, let alone its determinants, is not well known.[9] As such, this paper is possibly the first cross-country and time-series study that tries to understand the development of government bond markets and its currency structure.[10]

The rest of the paper is structured as follows. Section 2 describes the data. Section 3 presents some descriptive statistics on bond markets. Section 4 discusses the

[8] Note that some might call these sovereign bonds. We use the term government bonds so that it is clearer that we include both central-government as well as local-government bonds, though most bonds in our sample are issued by central governments.

[9] Perhaps, Hausmann and Panizza (2002), a contemporaneous paper to this one, is the only other paper that that uses this type of data to understand the "original sin." But that paper is different in scope, obtaining different results.

empirical strategy to study the factors affecting the size and structure of government bond markets. Section 5 shows the estimation results. Section 6 concludes.

2. Data on bond markets

We are primarily interested in explaining two aspects of government bond markets. First, we try to understand the development over time of the size of bond markets in domestic and foreign currency across countries. Second, we want to study the share of public debt denominated in foreign exchange. We also want to cover the largest sample of countries and the longest time series available, comprising both domestic and international issuances, and detailing the currency choices. Data sources and availability differ, however, depending on the issuing country (particularly, developed versus emerging economies) and the issuing market (domestic versus international markets). While there is a fairly comprehensive coverage for domestic and international markets for many developed countries (though even here good coverage is quite recent), reliable and complete data are still scarce for emerging market economies. Moreover, in many cases, a particular source of data covers only one market or one issuer.

Reviewing the various sources available, the Bank for International Settlements (BIS) appears to be the most comprehensive source in terms of countries, years, markets, and types of securities covered. The BIS collects security-level data from the Bank of England, Capital Data, Euroclear, International Securities Market Association (ISMA), and various national sources. The BIS publishes these data on an aggregate basis, addressing, among others, the problem of double counting. For domestic markets, that is,

[10] It would be also interesting to study the maturity structure of government bonds, but the data we were able to collect are not very rich to analyze that aspect.

bonds issued domestically, the BIS covers the public sectors of some 41 countries from 1989 to the present on a quarterly basis, comprising amounts outstanding as well as net, new issues. For international markets, the BIS provides quarterly data for 77 countries, but the coverage starts only in the third quarter of 1993. All data are measured in current U.S. dollars.

We want to understand the size of government bond markets in both domestic and foreign currency. BIS data includes information on the currency composition of the amount outstanding of all government bonds. We are, however, not interested in the detailed structure of bonds across different non-local currencies and use the information on currency composition only to classify bonds into two categories: local currency denominated issues versus foreign currency denominated issues, where the latter aggregates all amounts outstanding in currencies other than the local currency.[11]

Based on the compiled data, we construct year-end values for the amounts outstanding of government bonds in local and foreign currency and the year-end foreign currency share. We use year-end data, as our explanatory variables are generally available only on an annual basis. The final dataset of those countries and years for which we have the amounts outstanding from both domestic and international markets, as

[11] The database also contains information on "domestic" and "international" bonds, i.e., those bonds targeted to international and domestic investors. This partition gives another indication of the degree of internationalization of bond markets. However, in a situation with no or very limited capital controls, the distinction between domestic and international bonds becomes difficult, especially in terms of targeted, let alone final, investor bases. Moreover, the breakdown between domestic and international bonds in terms of investment base has severe limits, as foreigners purchase many domestic bonds and national residents hold foreign currency bonds domestically and offshore, particularly in emerging markets. To a large extent, international bonds comprise only foreign currency issues placed under governing laws different from the ones that apply to the issuer. There are, however, also domestic bonds, which are issued in or indexed to foreign currency and not subject to laws different from those of the issuer's. As such, the foreign currency and market issuance breakdown do not overlap perfectly.

well as the currency breakdown, has a reduced coverage: it covers data for 36 countries between 1993 and 2000.

3 Descriptive statistics

This section provides some descriptive statistics of the data compiled. The overall size of the global government bond market is shown in Figure 1. In absolute (nominal) U.S. dollars terms, government bond markets in developed and emerging economies expand from some U.S. dollars 14 trillion in 1993 to some U.S. dollars 19 trillion in 2000. In relative terms, government bond markets of emerging economies increased more, from U.S. dollars 381 billion in 1993 to one trillion U.S. dollars in 2000. Despite the large percentage increase, emerging markets do not represent more than five percent of the world government bond market in the year 2000.

We next scale total bonds outstanding by gross domestic product to show the relative debt stocks for each country, and calculate foreign currency shares. Table 1 shows summary statistics for these variables, grouped by developed and emerging economies and evaluated at three points in time, 1993, 1996, and 2000. (The list of countries included in each group is displayed in Appendix Table 1.) The first variable, local currency government bonds outstanding over GDP, varies across groups of countries with a low mean of 19 percent for emerging markets in the year 1996 and a high of 50 percent for developed countries in 1996. The relative debt stock variable for all countries has a mean for the whole sample for each of the three periods of 38, 41, and 39 percent respectively, and is thus fairly constant over the entire period. For developed countries, there is actually a decline in debt stocks relative to GDP. This is mainly

because many countries exercised a greater degree of fiscal restraint over this period than in earlier decades, while economic growth was generally high, contributing to the slow or no growth in debt stocks relative to output. For the European Monetary Union (EMU)-members, an additional factor was adherence to the Maastricht criteria that explicitly limit the growth rates of debt (relative to GDP) and debt to GDP ratio. The one region for which the debt burden is not stable is Latin America, although the small sample of countries – Argentina, Brazil, and Mexico – makes for difficult generalizations for the region as a whole. In this region, the mean debt stock to GDP is only 17 percent in 1993, but increases to 31 percent in 2000 with the largest part of the increase concentrated in the last four years of the decade.

The lower part of Table 1 displays the ratio of foreign currency denominated debt to GDP. This panel shows that the ratio is lower than that of local currency denominated debt for both developing and developed countries and all years. While the ratio of foreign currency denominated debt to GDP declines for developed markets, from 10 percent in 1993 to 6 percent in 2000, it increases for emerging markets, from 2 percent to 5 percent over the same period. Foreign currency shares are fairly constant at the global aggregate level, as trends in developed countries offset those in emerging markets.

The share of foreign currency denominated bonds over total bonds is displayed in Figure 2. The chart shows that emerging market economies are increasingly issuing government bonds in currencies other than their own, from a mean share of 10 percent in 1993 to some 20 percent in 2000. On the contrary, developed countries show a declining trend in the share of foreign currency bonds, from 22 percent to 15 over the same period. Though not reported, there are differences across countries. A significant increase takes

place for Latin American countries, from a mean of seven percent in 1993 to 33 percent in 1996, declining somewhat to 27 percent in 2000, with a high in 2000 of 60 percent for Argentina. In Europe, transition economies also start to issue relatively more debt in foreign currency towards the end of the decade. The share of foreign currency bonds is the lowest for Germany and the U.S.[12]

The differences between developed countries and emerging markets in terms of absolute amounts and debt composition (that is, the share of foreign currency issues), become even clearer when analyzing in more detail the structure of the global government bond market in 2000. Figure 3 shows that of the 19 trillion U.S. dollars in government debt outstanding among the 36 countries, 95 percent is on account of developed countries. The figure also shows again that foreign currency issues are much more important for emerging market governments than for developed country governments, 17 percent versus two percent in 2000. Among developed countries, the U.S. and Japan are the two largest borrowers in their own currencies, accounting for 74 percent of domestic currency bonds in all developed countries. Not surprisingly, both countries have relatively minimal foreign currency borrowings. Among developed countries, Canada, Italy, and Sweden are the three largest foreign currency issuers accounting for some 49 percent of the whole foreign currency market. Among emerging market economies, the two largest domestic currency issuers are Brazil and China, accounting for 55 percent of the emerging markets' total, while Argentina, Mexico, and Brazil are the largest emerging market foreign currency issuers, accounting for 64 percent

[12] The impact of the introduction of the Euro is one factor reducing arithmetically the share of foreign denominated bonds among the EMU-members, but this fact does not affect the figures significantly.

of the emerging markets' foreign currency borrowings. In other words, the three largest foreign currency issuers are all from Latin America.

Figure 4 shows the currency composition of bonds in the Eurobond and foreign markets as of the end of 2000. The top charts show that bonds outstanding of developed countries are either in domestic markets (95 percent) or in the Eurobond market. Of the outstanding bonds of emerging markets, 83 percent is in domestic markets, 16 percent in Eurobonds, and the rest in foreign markets. In the Eurobond market, developed countries issue mostly in local currency, 62 percent. This reflects participation by the U.S. in U.S. dollars and by European countries, for which Euro issues are considered to be local currency issues. Dollar issues account for 15 percent and Euro issues account for 2 percent. The amount outstanding for developing countries is mostly in U.S. dollars (64 percent) and then in Euros (16 percent). The U.S. dollar is the most important currency in foreign markets, but currencies like the yen, Swiss franc, and French franc are also important. Still, this market's overall size is relatively small.

Figure 5 shows the size of the bond market and its composition for individual countries (the figure is split into two panels to accommodate the large differences among countries). It displays some of the expected results, that is larger countries —in terms of GDP— have larger government bond markets and, in general, have a smaller amount of issues in foreign currency. Figure 6 shows the debt stocks relative to countries' GDP. Countries with higher debt ratios are mostly developed countries. This may be because these countries' better institutional frameworks and sounder fiscal policies mean that they have stronger repayment capacity and can sustain higher debt-to-GDP ratios. It can also reflect the larger role of the government in these economies, in part arising from a greater

share of transfers, including social security. Figure 7 shows the share of foreign currency claims. The figure shows the importance of foreign exchange issues for countries like Argentina, Iceland, Russia, and Sweden, as well as for some special cases like Luxembourg, which is a major financial center for the issuance and trading of Eurobonds. The figure also confirms that developed countries tend to issue more debt in their own currency, although there are exceptions such as Luxembourg and Sweden.

4. Empirical methodology

We now turn to analyze the determinants of the size and currency composition of government bond markets. The size variables we use are the ratio of local currency government bonds and that of foreign currency bonds over GDP, while the currency choice variable is the ratio of foreign currency government bonds over total government bonds. We use logs for the three dependent variables. We estimate the relations between these three variables and a set of regressors using panel feasible generalized least squared (FGLS) estimations, allowing for heteroskedastic error structures and cross-sectional correlation within countries. We next specify the set of explanatory variables we use.

The several strands of the literature reviewed suggest a large number of explanatory variables to be included in our regressions. In our final selection of explanatory variables, we are mostly guided by the more recent literature and the need to avoid endogeneity potentially affecting our results. Among the factors identified as being related to the size and development of bond markets, there are many variables that can be subject to criticism of being endogenous. These variables include the size of fiscal deficits, economic growth, the level of domestic (nominal and real) interest rates, as well

as other macro variables. To partly overcome this problem, we use as much as possible institutional variables and macroeconomic indexes, which should be relatively less sensitive to the evolution of bond markets themselves.

The specific explanatory factors we use (further detailed in Appendix Table 2) can be classified into four different categories: size and demand; macroeconomic policy stance; institutional development; and exchange rate regime. Regarding the size and investor demand variables, we use total GDP in nominal U.S. dollars as a proxy for the size of the economy and the potential local liquidity of government bond markets. To proxy for the demand for government bonds, we include the ratio of the total deposit base in the banking system over nominal GDP. Since the size of the banking system is highly correlated with the overall development of the financial system (including a country's institutional investors base, as shown in Beck, Demirguc-Kunt, and Levine 2001), this measure proxies for the overall potential domestic demand for government securities.[13]

For the country's macroeconomic policy stance, two variables are used. One is an "inflation policy" index, a subcomponent of the index of economic freedom of the Heritage Foundation. The index represents the absence of strict monetary policy and is based on the average inflation rate, with higher values representing worse monetary policy. The second variable is the index "fiscal burden of government," also a subcomponent of the index of economic freedom. This variable measures the fiscal pressure imposed by the government according to the level of the country's corporate tax rates and the overall size of government expenditure. Contemporaneous values of these two variables are to some extent endogenous, in the sense that countries with larger debt

[13] The data coverage on the size of institutional investors would have reduced the sample size too substantially.

may be able to avoid using inflation as a means to raise revenues and finance higher expenditure levels, leading to lower scores on the two indexes. We therefore control for the potential endogeneity of these variables by using lagged values and, alternatively, initial values of the regressors, since it is difficult to find good instruments.

For the overall institutional framework, we use a measure called "institutionalized democracy," which is part of the Polity IV political economy database maintained at the University of Maryland. This variable measures the quality of the democratic institutions imposing constraints on the executive (as well as the degree to which civil liberties are being guaranteed). This proxy for the political environment addresses the argument in the public finance literature that the nature of the political regime and political instability may have an important effect on the size and scope of government activities, including government debt.

The last set of variables relates to the exchange rate regime and analyzes the link between the flexibility of the exchange regime and the size of the domestic and foreign currency debt markets. We use, alternatively, one of three indexes of exchange rate regimes. One index reflects the officially announced or "de jure" exchange rate regime. But, since countries do not follow the regime they publicly announce, we use two other indexes that reflect the actual or "de facto" exchange rate regime, one developed by Levy Yeyati and Sturzenegger (LYS) (2002) and another by Reinhart and Rogoff (RR) (2002). Since the share of foreign currency liability can affect the degree to which countries allow their currencies to float (i.e., the exchange rate regime can be endogenous to the

share) and as good instruments are not available, we only use lagged or initial values of the currency regime variable.[14]

5. Regression results

The econometric results are presented in Tables 2-4, with each table displaying regression results for one dependent variable at a time—the log of local currency denominated bonds over GDP, the log of foreign currency denominated bonds over GDP, and the log of share of foreign currency bonds—using in every table the same set of independent variables. The different columns display several specifications, with the two independent variables with the widest coverage (log of GDP and log of total deposits over GDP) always present. We then add one additional variable at a time in columns 2-6 to avoid having to reduce the number of observations significantly, given that the independent variables have different country and time coverage. Columns 7-8 reports results with all the regressors, including only the LYS variable for the exchange rate regime.[15] Column 8 shows the result using initial values, instead of lagged values, of the variables that might still present endogeneity problems; these are the inflation index, fiscal burden, and the exchange rate regime. The Wald tests in all tables show that the explanatory variables are always jointly significant.

Table 2 shows the results for the log of local currency bonds over GDP as the dependent variable. We find that countries with larger economies have a larger government bond market. This result is very robust and holds across specifications. This result is interesting because it suggests that scale effects may exist in the development of

[14] This phenomenon has been dubbed "fear of floating;" see Calvo and Reinhart (2002).

local government bond markets. This could be because there are economies of scale in the development of the infrastructure of local bond markets, including incurring the fixed costs of establishing clearing and settlement systems and developing the legal framework for issuing and trading. Also, it is very likely that scale effects increase liquidity in secondary markets for bonds.

Regarding the size of the banking system, we find that countries with larger banking systems issue more debt. This result is also very robust and holds across specifications. This result may indicate that countries with a larger depositor base have more demand for their bonds. This might reflect the fact that deposit-taking banks directly invest in government paper as well as that a more developed banking system is associated with larger institutional investor bases. Moreover, a more developed banking system may create demand for government securities among the general public through better-developed distribution channels, possibly including the presence of a primary dealers network. This may indirectly increase investors' interest in buying bonds because of more liquid secondary markets.

We now turn to the macroeconomic indicators. In terms of monetary policies, we find that lower inflation rates are associated with larger local currency government bond markets. This is to be expected since lower inflation rates tend to be associated with a lower volatility of inflation and, consequently, a lower tendency for governments to inflate away the outstanding debt, thus making local currency debt less risky. Regarding fiscal policies, we find that larger government expenditure help sustain larger bond markets. A general larger role of the government, including presumably the ability of the

[15] We also used the other two variables for exchange rate regimes, obtaining qualitatively similar results. We omit reporting those results to save space.

government to tax the economy more (easily) may thus affect the willingness of investors to finance the state and the need of governments to issue debt. The significance of the larger fiscal expenditure could also reflect an underlying desire of citizens for a larger distributive role of the government, both within a given period through larger expenditures, and between generations and over time through larger deficits and higher debt stocks. Still, this result has to be interpreted with caution since the variable becomes insignificant when including other regressors.

Another robust result across specifications is the sign for the institutional development variable. Specifically, countries with good democratic institutions have larger government bond markets relative to their GDP. This suggests that democracy is very important in the eyes of investors, maybe as it is associated with a greater credibility of the state, better quality of decision making, and a wider public's acceptance of the overall policy making process, including macroeconomic policy making. This finding confirms evidence from Isham, Kaufmann, and Pritchett (1995), Acemoglu, Johnson, and Robinson (2000) as well as from the World Development Report (World Bank 2001) and many others regarding the role of institutions in determining the quality of (macro) economic management. In a narrower sense for the development of bond markets, it may be that more effective constraints on a country's executive reduce the (perceived) risks of default on government debt, including forms of default through inflation spikes.[16] A more demand-related explanation can be that more democratic countries "desire" (and can sustain) a greater role of the government in their economies, through providing

[16] For more discussion on this topic, see the political economy literature mentioned above. Also see Roubini and Sachs (1989) and Grilli et al. (1991), who analyze the electoral system and government structure as determinants of public debt in OECD countries.

different forms of insurance, leading to higher fiscal expenditures as well as larger debts (as discussed above).

Finally, the different exchange rate regimes variables tend to be significant and have a positive sign. In other words, countries with a more flexible exchange rate regime (de jure or de facto) appear to have larger local currency bond markets. Investors in countries with more flexible exchange rate regimes might be less fearful of sharp depreciations of the currency and of large inflation spikes that can decrease the real value of their holdings. Also, governments with more flexible exchange rates might finance themselves more through the bond market, and particularly through local currency bonds, to avoid increasing the burden of the debt if the currency depreciates.[17]

Table 3 presents the results for the foreign currency bonds over GDP variable. Unlike in the case of domestic currency bonds, the log of GDP variable has a negative coefficient in all specifications. This result is very robust and the variable is statistically significant in all specifications. This result reinforces the scale effect described above, in the sense that having a smaller domestic economy and lower overall demand for securities may make it more attractive for smaller countries to issue in foreign currency in order to meet their financing needs. This result is in line with the pattern shown in Figure 2, where smaller and emerging economies tend to issue more debt in foreign currency. The coefficient on total deposits is also different in this regression from that for the local currency bond variable as it has a negative sign. That is, a larger deposit base decreases

[17] There can be also be indirect interactions between the institutional framework and the exchange rate arrangements chosen. Some observers have pointed out, for example, that the choice of appropriate regime depends on the accompanying institutional arrangements (see Goldstein 2002).

the amount of debt issued in foreign currency. However, the variable is only significant in some specifications.

The macroeconomic and institutional variables also have an effect on the size of foreign currency bond markets. However, in contrast to the size of the economy and the total deposit variables, these factors tend to affect foreign currency bonds in the same way that they affect domestic currency bonds. Higher inflation is associated with a smaller stock of foreign currency bond relative to GDP. In some sense, this result may surprise because inflation should primarily affect the amount of local currency bonds. But, high inflation is also typically associated with macroeconomic instability, what might explain the lower demand among investors for both domestic currency and foreign currency bonds. Also, as before, the fiscal burden variable is positively correlated with foreign currency bonds. Countries with good democratic institutions have larger foreign currency bond markets, suggesting that investors that purchase this type of debt are more willing to buy bonds when governments are more legitimate and policies possibly more credible. Nevertheless, the latter result is not robust across specifications.

The variables that capture the actual exchange rate regime suggest that countries with more flexible exchange rate regimes have smaller foreign currency bond markets relative to GDP. This result is consistent with predictions of the literature discussed above, in the sense that exchange rate rigidity prompts governments to issue more debt in foreign currency, possibly because it induces moral hazard. Also, governments with more fixed regimes might want to signal the credibility of their regime by issuing relatively more foreign currency debt. As foreign currency debt tends to be cheaper (at least in nominal terms), can justify issuing foreign currency debt instead of more

expensive domestic currency debt and at the same time claim that the peg will persist in the future. This result is also consistent with arguments according to which foreign currency debt can act as a disciplining device or commitment mechanism (see Calvo 1996, Jeanne 2002, and De la Torre, Levy Yeyati, and Schmukler 2003). Of course, the higher amount of foreign exchange bonds does create some risks.

Table 4 presents the results for the variable foreign currency bonds over total bonds. These results can already be to some degree inferred from the two previous tables, especially when the explanatory variables had different signs, but this table shows explicitly how the different variables affect the share of foreign currency bonds. The table shows that the absolute size of countries' GDP and the ratio of deposits to GDP have a negative effect on the share of foreign currency bonds. In other words, countries with larger economies and a larger depositor base have a higher share of domestic currency debt.

With respect to the macroeconomic and institutional variables, higher inflation is associated with a lower share of foreign currency debt. The result suggests that inflation has more of an impact on foreign currency debt, perhaps because holders of foreign currency debt are more sensitive to changes in macroeconomic factors than domestic investors are, maybe because foreign investors face a larger set of investment opportunities. The coefficient on the fiscal burden variable is positive, implying that countries with a higher fiscal burden can or want to issue a higher proportion of foreign currency debt, possibly because these economies tend to be more open as well. Although the variable institutionalized democracy is positive in column 3, it is not statistically significant across specifications.

Though the official exchange rate regime is positively associated with the share of foreign currency debt, the variables for the actual exchange rate regime are negatively associated with the share. In other words, governments from countries that de facto follow a more fixed exchange rate regime tend to have a higher proportion of foreign currency debt, as various papers predict. The differences in Tables 3-4 between the results using de jure and de facto classifications of exchange rate regimes highlight the disparity between these classifications and suggest that it is important to analyze the effects of both the de jure and de facto measures.

6. Conclusions

The findings in the paper confirm much of the current thinking regarding the factors that facilitate governments to issue debt. In particular, we found that macroeconomic and institutional factors affect local currency and foreign currency bond markets in similar ways. The results indicate that better fundamentals have a positive effect on the size of government bond markets. We also found that the stock of foreign currency debt is more sensitive to these fundamental factors than the stock of local currency debt is. Some of these results are consistent with previous findings for stock markets (Claessens, Klingebiel, and Schmukler 2002). There we found that better fundamentals allow countries to develop their domestic financial markets, but they help even more in facilitating access of firms to international financial markets, especially for emerging markets.

This paper also showed that government bond financing in domestic currency is different from that in foreign currency. Larger economies and economies with relatively

large domestic investor bases tend to have larger amounts of bond financing in domestic currency. Furthermore, countries with more flexible exchange rate regimes raise relatively more domestic currency finance. This suggests that countries that can obtain foreign financing do so to substitute for domestic financing, perhaps because of an inability to obtain domestic financing at reasonable costs or because of incentives in place, such as moral hazard considerations arising from an international bailout. It may also be because governments issue in foreign currency (try) to bind themselves to a higher commitment on macroeconomic management.[18]

Our findings have several implications for the current discussion on the benefits of developing domestic bond markets, especially in terms of reducing exposure to foreign exchange risk for emerging markets. The fact that smaller economies tend to issue more foreign currency denominated claims suggests some scale effects in the development of local bond markets, perhaps due to the fixed costs of establishing the infrastructure or because of externalities in liquidity. This suggests that there are some limits to the development of local bond markets. And the fact that more flexible regimes can support a greater share of domestic currency claims suggests more rigid exchange rate regimes generate incentives, not only for the private sector, but also for the government to borrow in foreign currency, exposing it more to foreign exchange risk. This confirms the latest thinking that there can be important interaction effects between macro policies and debt management, which affect overall risks. As such, focusing on one aspect alone, like the

[18] There is a difference and a parallel here to the internationalization of stock markets. The type of financing obtained by corporations in domestic markets and foreign markets is broadly similar as firms sell the same claim (though international markets may offer a lower cost, greater volume, or higher liquidity there is no currency difference), which is not the case for government borrowing in foreign exchange compared to in local currency. The similarity is that corporations that issue in international markets may be binding themselves to a different, higher level of corporate governance standards, whereas governments try to bind themselves to a higher level of currency stability.

actual share of foreign currency denominated debt at any point in time, may not be the most useful indicator of, say, the risk of a financial crisis. The results also suggest some dynamic effects, where building up credibility may take time and require a government to issue domestic debt for some time, at what appear to be higher cost than foreign currency denominated debt, after which financing costs may decline. What other requirements may be necessary to make this is virtuous cycle is unclear.

While this paper has helped to understand the structure of government bonds, many issues remain open for future research. On the methodology front, future research might investigate whether good instruments exist to test and control for potential reverse causality problems and endogeneity. We did try to address this issue by using institutional variables and indexes that tend to be more exogenously determined as well as by using lags and initial values, but it is still possible that we have not been successful in fully avoiding endogeneity problems. Also, although we have tested the importance of several alternative and potentially relevant variables, the correlations obtained can be spurious if there are significant omitted regressors, not yet considered. Further testing in these directions would be welcome.

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Figure 1

Evolution of Government Bond Markets

This figure shows the evolution over time of the amount outstanding of government bonds issued by the public sector in billions of U.S. dollars. Bonds are issued in local and foreign currencies in domestic, foreign, and Eurobond markets. The source of the data is the Bank for International Settlements.

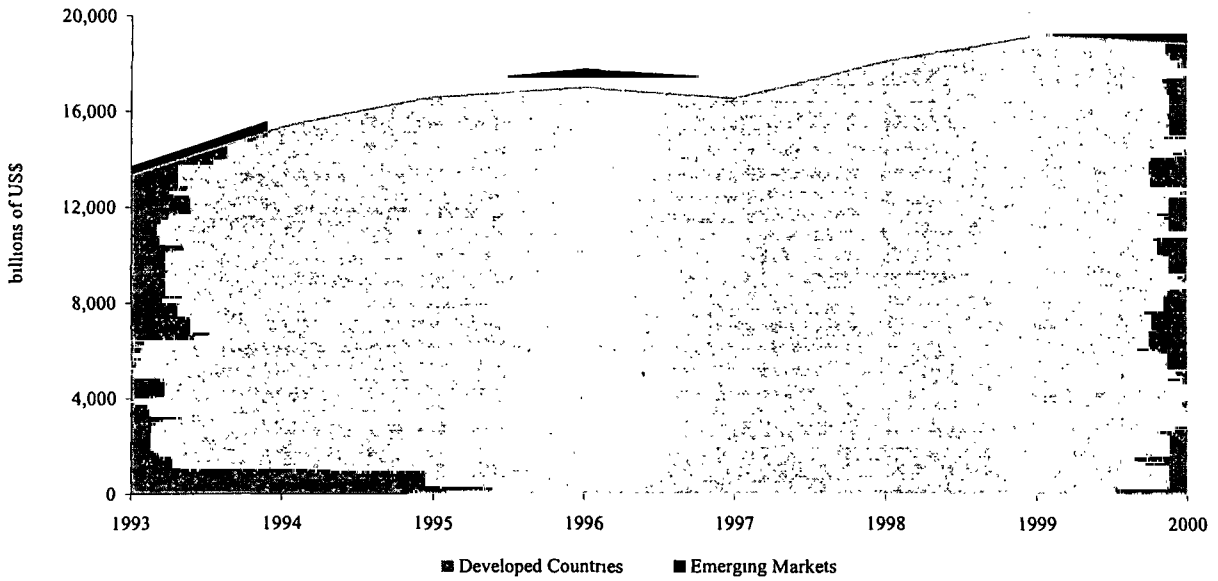


Figure 2

Share of Foreign Currency Government Bonds

This figure shows the evolution over time of the share of foreign currency denominated bonds over total amount outstanding of bonds issued by the public sector. The values are constructed from country averages and divided in developed countries and emerging markets. The source of the data is the Bank for International Settlements.

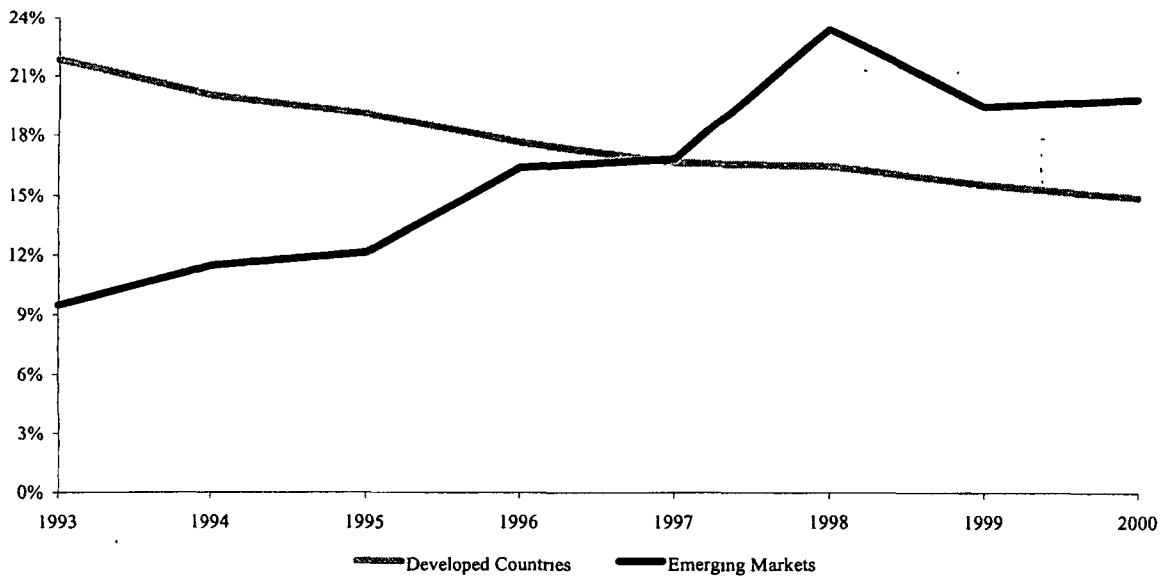


Figure 3

Composition and Participants of Government Bond Markets

The values shown are amounts outstanding of bonds issued by the public sector of 36 countries (24 developed and 12 emerging) as of December 31, 2000. Bonds are issued in domestic, foreign, and Eurobond markets. The source of the data is the Bank for International Settlements.

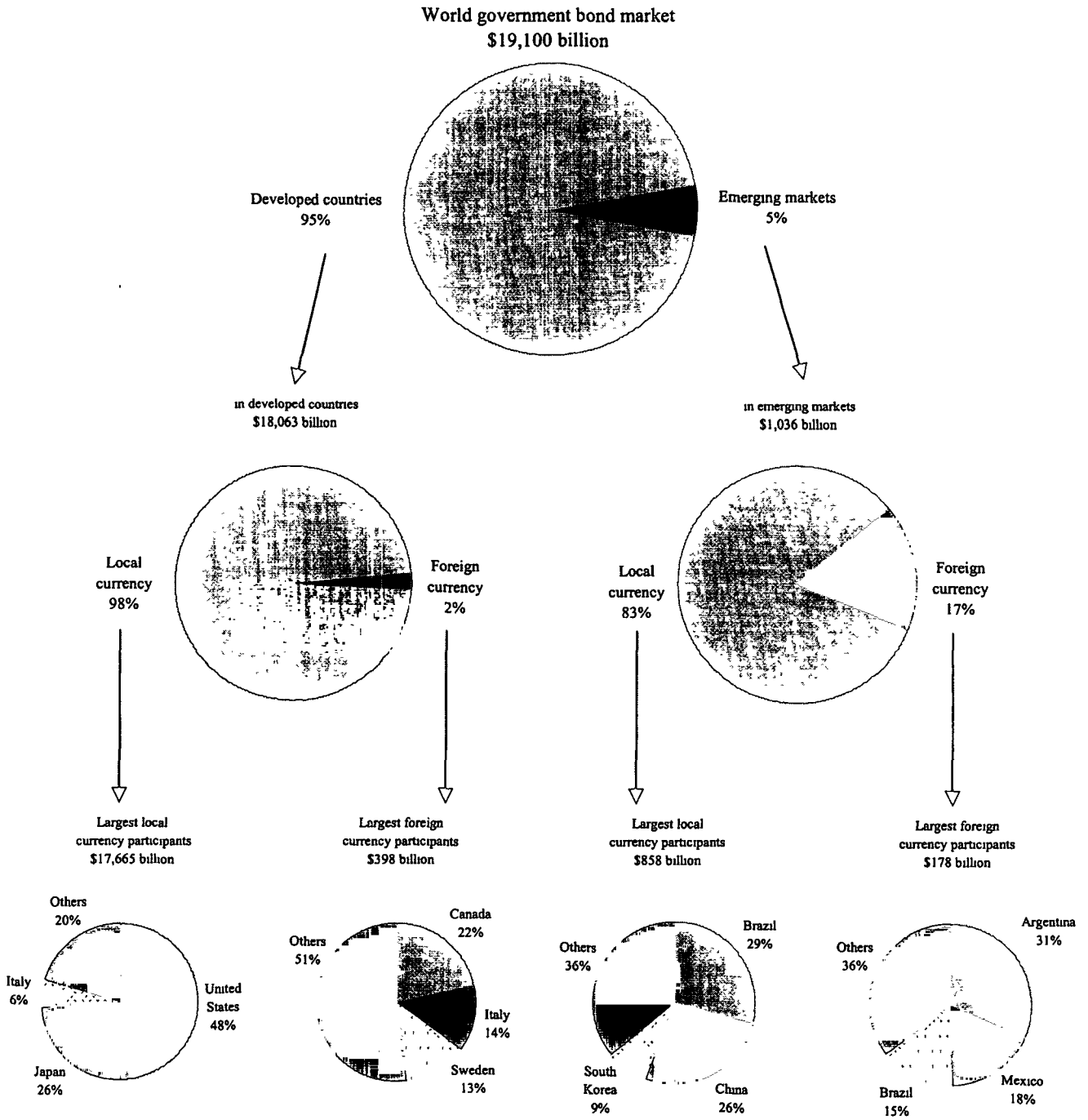


Figure 4

Currency Structure of International Government Bond Markets

The values shown are amounts outstanding of bonds issued by the public sector of 36 countries (24 developed and 12 emerging) as of December 31, 2000 In the cases of the United States and for 11 European Union members, the U.S. dollar and the euro are considered local currencies, respectively. The source of the data is the Bank for International Settlements.

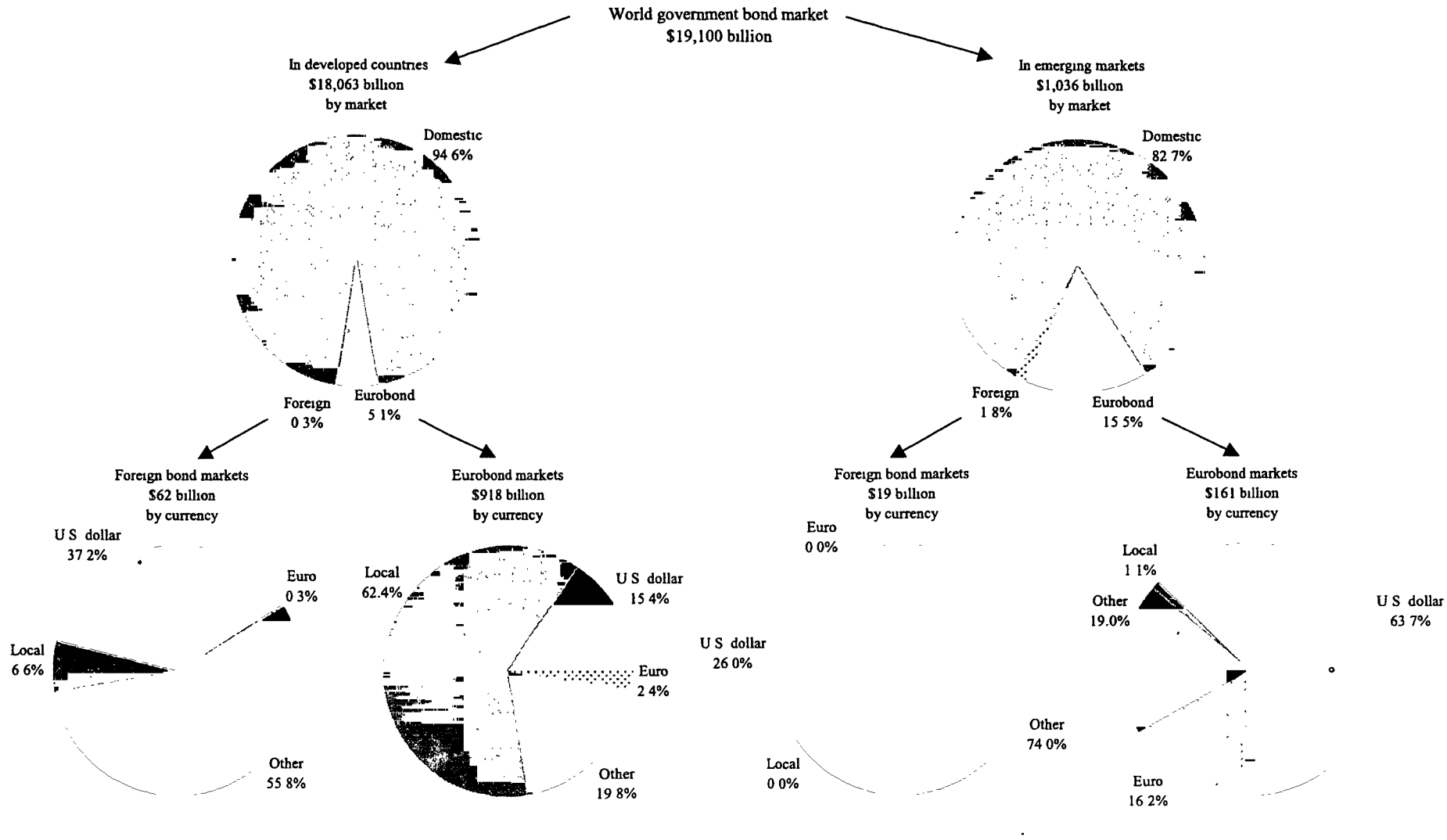
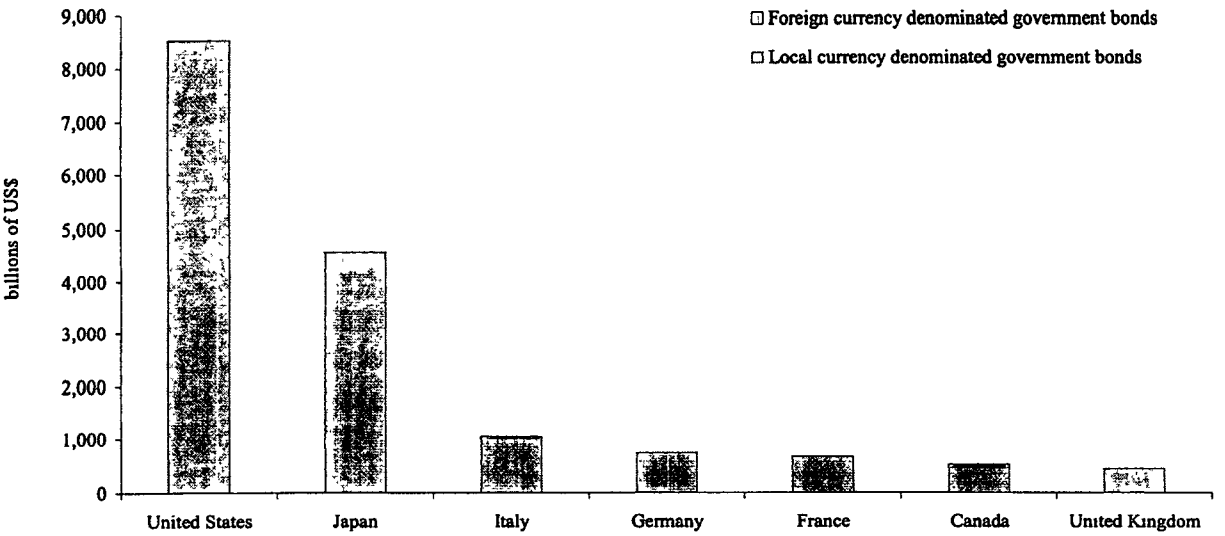


Figure 5

Country Ranking Based on Government Bonds

This figure shows the size of government bond markets of 36 countries as of December 31, 2000. Total government bonds outstanding are divided into two categories depending on the currency of issuance. The first graph shows data for the seven largest countries of the sample while the second graph shows data for the remaining countries with a different scale. In some cases, and especially for the developed countries, the amounts outstanding of foreign currency denominated bonds are negligible and may not appear visible in the figure. The values are expressed in billions of U.S. dollars. The source of the data is the Bank for International Settlements.



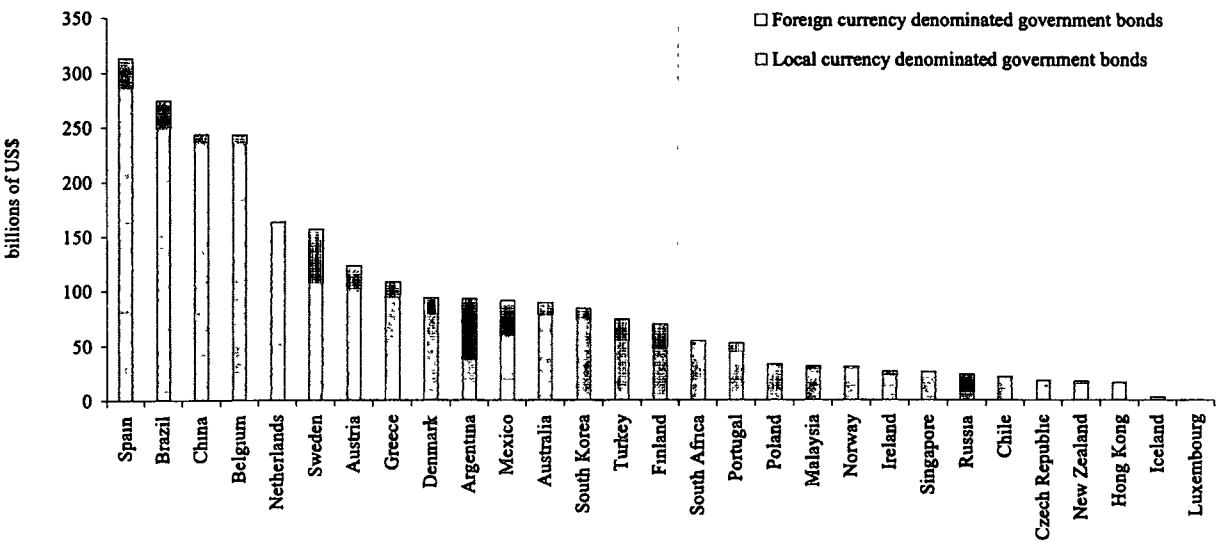


Figure 6

Country Ranking Based on Government Bonds / GDP

This figure shows the shares of total government bonds outstanding over GDP, ranked in a descending order as of December 31, 2000. Each share is divided into two categories based on the currency of issuance. The source of the data is the Bank for International Settlements.

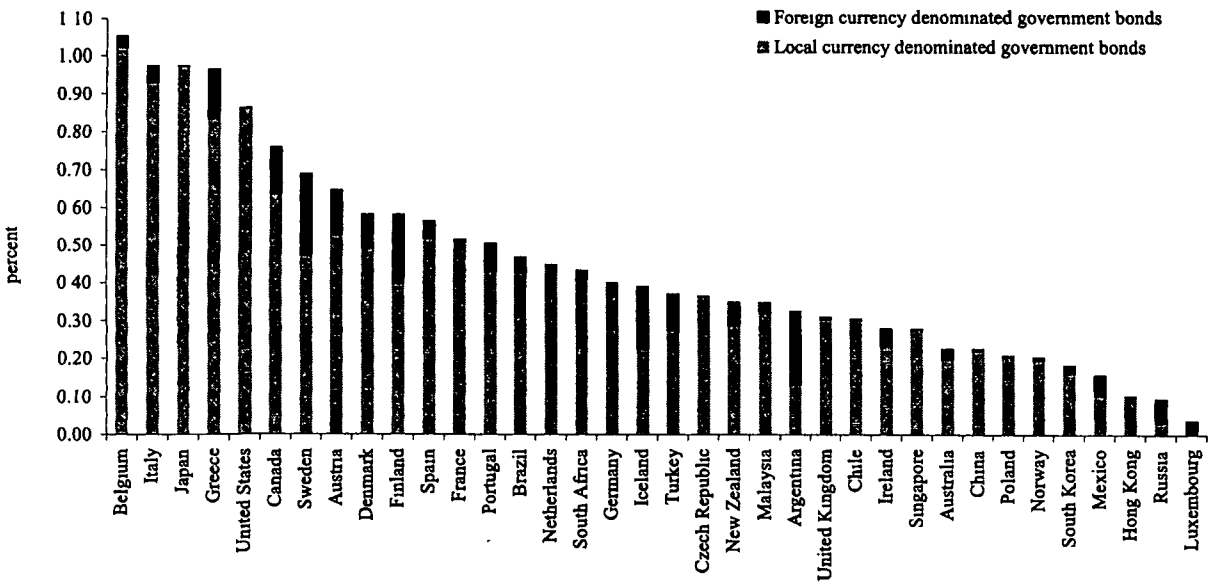


Figure 7

Country Ranking Based on Share of Foreign Currency Government Bonds

This figure shows the shares of foreign currency denominated government bonds over total government bonds outstanding, ranked in a descending order as of December 31, 2000. The source of the data is the Bank for International Settlements.

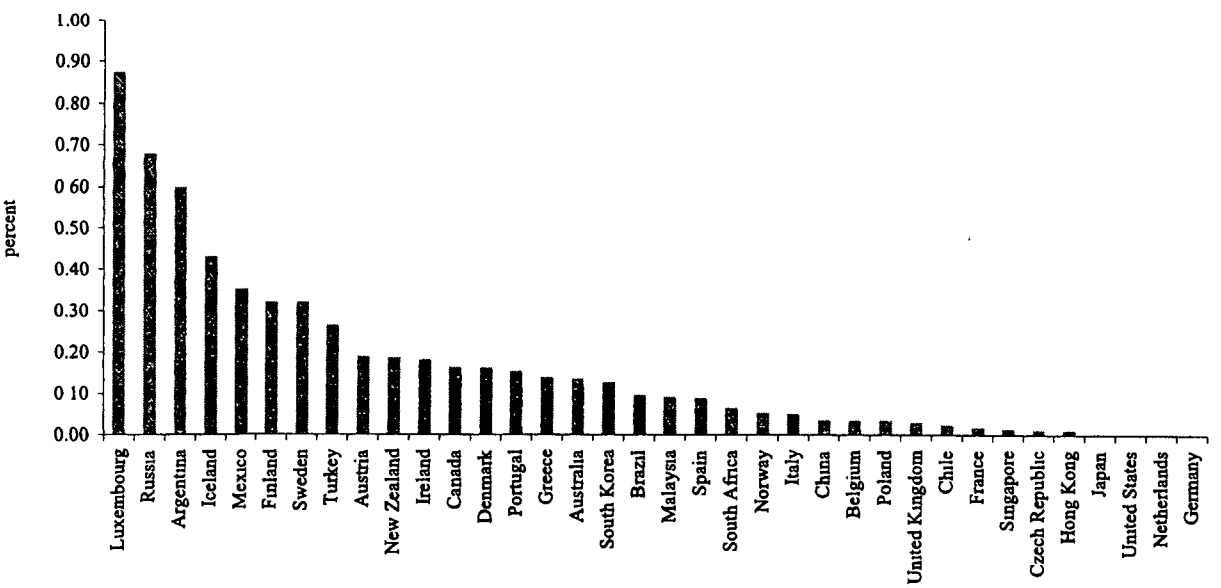


Table 1

Summary Statistics

This table shows summary statistics of two of the dependent variables used in the regressions: local currency denominated government bonds outstanding over GDP and foreign currency denominated government bonds outstanding over GDP. The series are divided in two groups: developed countries and emerging markets (See Appendix Table 1). Measures are shown for three points in time: 1993, 1996, and 2000. The minimum values that appear with a 0.00 are generally low values but not absolute zeros, however, Germany presents zeros between 1993 and 1998 in the second variable.

Local Currency Government Bonds / GDP

	1993						1996						2000					
	No. Obs.	Mean	Median	Max	Min	Std. Dev.	No. Obs.	Mean	Median	Max	Min	Std. Dev.	No. Obs.	Mean	Median	Max	Min	Std. Dev.
Developed Countries	21	0.46	0.37	1.01	0.00	0 26	23	0.50	0.41	1.10	0.00	0.28	24	0.47	0.44	1.02	0.00	0.28
Emerging Markets	10	0.21	0.11	0.66	0.08	0.20	10	0.19	0.15	0.49	0.06	0.13	12	0.24	0.24	0.42	0.03	0.12
Total	31	0.38	0.33	1.01	0.00	0.27	33	0.41	0.36	1.10	0.00	0.28	36	0.39	0.34	1.02	0.00	0.26

Foreign Currency Government Bonds / GDP

	1993						1996						2000					
	No. Obs.	Mean	Median	Max	Min	Std. Dev.	No. Obs.	Mean	Median	Max	Min	Std. Dev.	No. Obs.	Mean	Median	Max	Min	Std. Dev.
Developed Countries	21	0.10	0.07	0.37	0.00	0.10	23	0.09	0.05	0.34	0.00	0.10	24	0.06	0.04	0.22	0.00	0.07
Emerging Markets	10	0.02	0.01	0.06	0.00	0.02	10	0.03	0.01	0.07	0.00	0.03	12	0.05	0.03	0.20	0.00	0.05
Total	31	0.07	0.03	0.37	0.00	0.09	33	0.07	0.04	0.34	0.00	0.09	36	0.06	0.03	0.22	0.00	0.06

Table 2

Determinants of Local Currency Bonds

This table shows regressions estimated through FGLS with heteroscedastic error structure and cross-sectional correlation for 36 countries between 1993 and 2000. For columns (1) (7), inflation index, fiscal burden, and the three exchange rate regimes are lagged one period, for column (8), these variables are expressed as their initial values of the time series. A constant is estimated but is not reported in the table. Institutionalized democracy takes higher values when countries have better democratic institutions Fiscal burden of government takes higher values when governments impose more pressure through expenditure and tax rates. Higher values of inflation index are associated with worse monetary policy or higher average inflation rate. The official and actual exchange rate regimes increase with the degree of flexibility of the exchange rate. The sources are Polity IV for institutionalized democracy, The Heritage Foundation for inflation index and fiscal burden of government, IMF International Financial Statistics for total deposits, IMF Exchange Arrangements and Exchange Restrictions for official exchange rate regime, Reinhart and Rogoff (2002) for actual exchange rate regime (RR), Levy-Yeyati and Sturzenegger (2002) for actual exchange rate regime (LYS), and World Development Indicators for GDP. The Wald test shown at the bottom is a joint test that all of the slope parameters in the regression are jointly equal to zero. Absolute values for z-statistics are in brackets. *, **, and *** mean significance at 10%, 5%, and 1%, respectively.

	Dependent variable: Log of Local Currency Government Bonds Outstanding / GDP							
	Lagged variables							Initial values
Independent variables:	1	2	3	4	5	6	7	8
Log of GDP	0.253 ***	0.231 ***	0.215 ***	0.063 ***	0.214 ***	0.215 ***	0.288 ***	0.152 ***
	[12.739]	[9.661]	[11.175]	[3.123]	[11.030]	[9.138]	[17.018]	[7.728]
Log of total deposits / GDP	0.460 ***	0.298 ***	0.511 ***	0.797 ***	0.531 ***	0.471 ***	0.339 ***	0.498 ***
	[10.014]	[5.232]	[10.432]	[20 704]	[10.651]	[8.707]	[5.009]	[8.234]
Inflation index	-0.110 ***						-0.082 ***	-0.146 ***
	[6.951]						[5.472]	[5.555]
Fiscal burden		0.247 ***					0.036	-0.033
		[9.290]					[1.566]	[0 659]
Institutionalized democracy			0.095 ***				0.116 ***	0.106 ***
			[4.164]				[8.269]	[4.695]
Official exchange rate regime				0.049 ***				
				[2 964]				
Actual exchange rate regime (RR)					0.013 ***			
					[3.212]			
Actual exchange rate regime (LYS)						0.004	0.014	0.145 ***
						[0.440]	[0.851]	[4.660]
Observations	159	159	234	203	240	194	144	219
Number of Countries	35	35	35	30	36	34	32	33
Wald test	533.05 ***	206.09 ***	223.10 ***	493 38 ***	180.26 ***	161.19 ***	572.46 ***	389.65 ***
Log likelihood	98.86	80.76	181.72	201.31	192.41	142.08	99.74	171.69

Table 3

Determinants of Foreign Currency Bonds

This table shows regressions estimated through FGLS with heteroscedastic error structure and cross-sectional correlation for 36 countries between 1993 and 2000. For columns (1) (7), inflation index, fiscal burden, and the three exchange rate regimes are lagged one period, for column (8), these variables are expressed as their initial values of the time series. A constant is estimated but is not reported in the table Institutionalized democracy takes higher values when countries have better democratic institutions Fiscal burden of government takes higher values when governments impose more pressure through expenditure and tax rates Higher values of inflation index are associated with worse monetary policy or higher average inflation rate. The official and actual exchange rate regimes increase with the degree of flexibility of the exchange rate. The sources are Polity IV for institutionalized democracy, The Heritage Foundation for inflation index and fiscal burden of government, IMF International Financial Statistics for total deposits, IMF Exchange Arrangements and Exchange Restrictions for official exchange rate regime, Reinhart and Rogoff (2002) for actual exchange rate regime (RR), Levy-Yeyati and Sturzenegger (2002) for actual exchange rate regime (LYS), and World Development Indicators for GDP. The Wald test shown at the bottom is a joint test that all of the slope parameters in the regression are jointly equal to zero. Absolute values for z-statistics are in brackets. *, **, and *** mean significance at 10%, 5%, and 1%, respectively

	Dependent variable: Log of Foreign Currency Government Bonds Outstanding / GDP							
	Lagged variables							Initial values
Independent variables:	1	2	3	4	5	6	7	8
Log of GDP	-0.759 ***	-0.645 ***	-0.713 ***	-0.841 ***	-0.687 ***	-0.652 ***	-0 678 ***	-0.681 ***
	[13.615]	[15.453]	[11.560]	[9.349]	[12.403]	[8.343]	[8.816]	[8.050]
Log of total deposits / GDP	-1.036 ***	-0.815 ***	-0.075	0.208	-0.120	-0.447 ***	-1.102 ***	-0.193
	[14 324]	[11.516]	[0.818]	[1.529]	[1.150]	[3.834]	[11.279]	[1 638]
Inflation index	-0.316 ***						-0.258 ***	-0.392 ***
	[13.057]						[7 487]	[6.508]
Fiscal burden		0.584 ***					0.284 ***	0.794 ***
		[11.051]					[3.566]	[3.842]
Institutionalized democracy			0.123 ***				0 123 ***	0.058
			[3.409]				[2 736]	[1.342]
Official exchange rate regime				0.141 ***				
				[2.592]				
Actual exchange rate regime (RR)					-0.003			
					[0.381]			
Actual exchange rate regime (LYS)						-0 002	-0.156 **	-0.406 ***
						[0.072]	[2.385]	[3.253]
Observations	159	159	234	203	240	194	144	219
Number of Countries	35	35	35	30	36	34	32	33
Wald test	326.51 ***	437.37 ***	143.95 ***	104.39 ***	154.10 ***	71 11 ***	528 78 ***	329.88 ***
Log likelihood	-30.59	-36.97	-24.54	-11.55	-43 29	-57.10	-58.09	-25 59

Table 4

Determinants of the Share of Foreign Currency Bonds

This table shows regressions estimated through FGLS with heteroscedastic error structure and cross-sectional correlation for 36 countries between 1993 and 2000 For columns (1) (7), inflation index, fiscal burden, and the three exchange rate regimes are lagged one period, for column (8), these variables are expressed as their initial values of the time series. A constant is estimated but is not reported in the table Institutionalized democracy takes higher values when countries have better democratic institutions. Fiscal burden of government takes higher values when governments impose more pressure through expenditure and tax rates. Higher values of inflation index are associated with worse monetary policy or higher average inflation rate The official and actual exchange rate regimes increase with the degree of flexibility of the exchange rate The sources are Polity IV for institutionalized democracy, The Heritage Foundation for inflation index and fiscal burden of government, IMF International Financial Statistics for total deposits, IMF Exchange Arrangements and Exchange Restrictions for official exchange rate regime, Reinhart and Rogoff (2002) for actual exchange rate regime (RR), Levy-Yeyati and Sturzenegger (2002) for actual exchange rate regime (LYS), and World Development Indicators for GDP. The Wald test shown at the bottom is a joint test that all of the slope parameters in the regression are jointly equal to zero. Absolute values for z-statistics are in brackets *, **, and *** mean significance at 10%, 5%, and 1%, respectively.

	Dependent variable: Log of Foreign Currency Government Bonds Outstanding / Total Government Bonds Outstanding							
	Lagged variables							Initial values
Independent variables.	1	2	3	4	5	6	7	8
Log of GDP	-0.884 ***	-0.918 ***	-0.723 ***	-0.927 ***	-0 705 ***	-0.865 ***	-0 903 ***	-0 722 ***
	[18.345]	[22.963]	[14.941]	[13.056]	[14 739]	[15 822]	[18.069]	[12 663]
Log of total deposits / GDP	-0.849 ***	-0.908 ***	-0.536 ***	-0.645 ***	-0 483 ***	-0.718 ***	-0.969 ***	-0 607 ***
	[10.903]	[11.963]	[7.006]	[6 072]	[5.257]	[7.349]	[13.728]	[6.869]
Inflation index	-0.095 ***						-0 065 ***	-0 100 ***
	[4.429]						[4.251]	[3 124]
Fiscal burden		0.199 ***					0.212 ***	0.562 ***
		[8.014]					[4.197]	[3 686]
Institutionalized democracy			0.065 *				-0.025	0 030
			[1.673]				[0.960]	[0.705]
Official exchange rate regime				0.096 **				
				[2.299]				
Actual exchange rate regime (RR)					-0.025 ***			
					[3.116]			
Actual exchange rate regime (LYS)						-0.067	-0 131 **	-0.565 ***
						[1.589]	[2 283]	[6 601]
Observations	159	159	234	203	240	194	144	219
Number of Countries	35	35	35	30	36	34	32	33
Wald test	391.83 ***	970 96 ***	290.78 ***	189.13 ***	250 30 ***	297 98 ***	916 49 ***	379.97 ***
Log likelihood	22.42	10.21	28.82	22.07	4 21	-15.41	-9.36	33.28

Appendix Table 1

Country Classification

This table shows the list of countries used in the tables and figures following the classification used by the International Monetary Fund.

Developed Countries	Emerging Markets
Australia	Argentina
Austria	Brazil
Belgium	Chile
Canada	China
Denmark	Czech Republic
Finland	Malaysia
France	Mexico
Germany	Poland
Greece	Russia
Hong Kong	South Africa
Iceland	South Korea
Ireland	Turkey
Italy	
Japan	
Luxembourg	
Netherlands	
New Zealand	
Norway	
Portugal	
Singapore	
Spain	
Sweden	
United Kingdom	
United States	

Appendix Table 2
Series Description and Data Sources

Series Names	Description	Source
Dependent Variables		
Local currency denominated government bonds outstanding (in current U S. dollars)	Amounts outstanding of bonds (including notes and money-market instruments) issued by the public sector denominated in their own local currency at year-end values. The public sector includes all government levels and state agencies. This variable comprises issues in all markets (domestic, foreign, and Eurobond). Comprehensive data are available for 36 countries from 1993 to 2000. The BIS sources are: Bank of England, Capital DATA, Euroclear, ISMA, Thomson Financial Securities Data, and national sources.	Bank for International Settlements, International Financial Statistics
Foreign currency denominated government bonds outstanding (in current U S dollars)	Amounts outstanding of bonds (including notes and money-market instruments) issued by the public sector denominated in currencies different from their own at year-end values. The public sector includes all government levels and state agencies. This variable comprises issues in all markets (domestic, foreign, and Eurobond). Comprehensive data are available for 36 countries from 1993 to 2000 The BIS sources are: Bank of England, Capital DATA, Euroclear, ISMA, Thomson Financial Securities Data, and national sources.	Bank for International Settlements, International Financial Statistics
Share of foreign currency denominated government bonds	This ratio is constructed by dividing foreign currency denominated government bonds by total government bonds outstanding.	Bank for International Settlements, International Financial Statistics
Independent Variables		
GDP at market prices (in current U S dollars)	Gross domestic product (GDP) at purchaser prices. GDP data is converted from domestic currencies using yearly official exchange rates. For a few countries, where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used. The data cover 36 countries from 1993 to 2000.	The World Bank: World Development Indicators
Fiscal burden of government	Fiscal burden of government is a component of the index of economic freedom published by The Heritage Foundation and encompasses income tax rates, corporate tax rates, and government expenditures as percent of output. The variable is a five-category scale in which higher scores represent higher level of government expenditure as a percent of GDP and and higher corporate tax rates. The data cover 35 countries from 1994 to 2001.	The Heritage Foundation
Inflation index	Inflation index is a component of the index of economic freedom published by The Heritage Foundation. The variable is calculated using the average inflation rate from 1991 to 2000 and has a five point scale where higher values represent higher average inflation rate or worse monetary policy. The original name of the variable is monetary policy The data cover 35 countries from 1994 to 2001.	The Heritage Foundation
Institutionalized democracy	Institutionalized democracy is conceived as three essential, interdependent elements. One is the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders. Second is the existence of institutionalized constraints on the exercise of power by the executive Third is the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation Other aspects of plural democracy, such as the rule of law, systems of checks and balances, freedom of the press, and so on are means to, or specific manifestations of, these general principles. The institutionalized democracy indicator is an additive eleven-point scale (0-10) The data cover 35 countries from 1993 to 2000	Polity IV, INSCR Program, CIDCM, University of Maryland

Series Names	Description	Source
Total deposits (current U S. dollars)	This variable is composed by all the deposits held by commercial banks and other financial institutions that accept transferable deposits including demand, time and savings deposits, and deposits from the government As the original data are available in domestic currency, the year-end market exchange rates are used to convert the variable into U S. dollars. The data cover 36 countries from 1993 to 2000	IMF International Financial Statistics
Official exchange rate regime	Official exchange rate regime is coded from 1 to 4 as follows: (1) exchange rate pegged to a single currency, (2) limited flexibility, (3) managed floating, and (4) independently floating. The variable covers 30 countries from 1993 to 1999.	IMF Exchange Arrangements and Exchange Restrictions
Actual exchange rate regime (RR)	Actual exchange rate regime (RR) is coded from 1 to 15 where higher values represent more flexible exchange arrangements and lower values more fixed arrangements. The variable covers 36 countries from 1993 to 2000.	Reinhart and Rogoff (2002)
Actual exchange rate regime (LYS)	Actual exchange rate regime (LYS) is a three-way classification of exchange rate regimes. The variable has been transformed in order to have higher values for more flexible exchange arrangements and lower values more fixed arrangements. The variable covers 34 countries from 1993 to 2000	Levy-Yeyati and Sturzenegger (2002)

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